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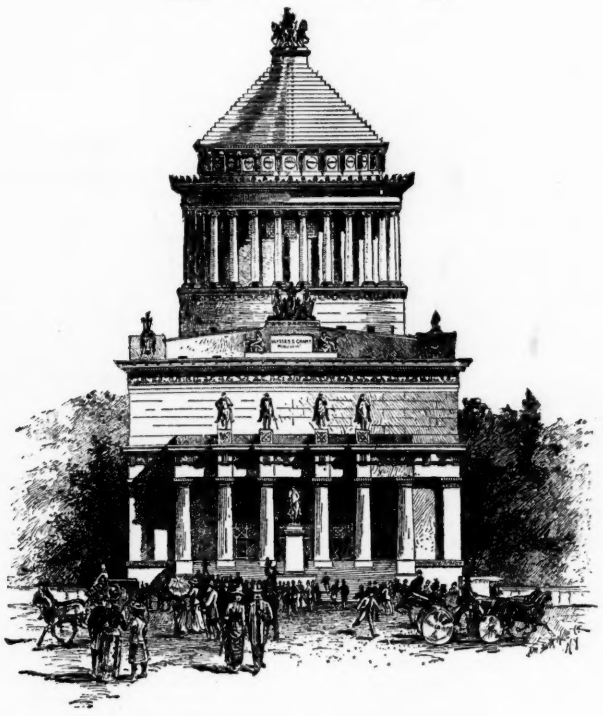


THE GRANT MEMORIAL.

THE monument to General Grant, of which we present an illustration, is to be erected over his grave, in Riverside Park in this city, opposite 122d street, and on the high bluff overlooking the Hudson River.

The memorial will be of light granite, about 100 feet square and 150 feet high. It will be on high ground, the base being about 150 feet above the level of the sea, which will put the pinnacle of the monument 300 feet higher than the Hudson. It will be high enough and large enough to be seen from the Palisades, the towers of the Brooklyn Bridge, all high grounds within ten miles of the park, and every vessel that sails up and down the river. Three millions of dollars have been spent by the city in its work of decorating this pleasure ground. The foundations for the monument are now finished, and the first course of granite, 10 feet in height, has been put under construction. On April 27th the President of the United States laid the corner-stone with impressive ceremonies, in the presence of a vast audience.

General Grant was buried there on August 8th, 1885, a temporary structure being erected over the tomb. Very shortly after his death meetings were held to provide for the erection of a monument, but, though the committee then appointed has been continued until recently, very little was accomplished by it. Less than a third of the sum total was contributed, and much of this was spent for salaries and printing. This committee has been reorganized, is much smaller, and contains none but active men. Gen. Horace Porter, long associated with General Grant, has abandoned his private business, and will not resume it until the monument is assured and the money subscribed. He receives no compensation for this, nor do any other members of the committee. The total cost will be about $500,000, leaving $350,000 still to be procured. Appeals have been issued to every calling and occupation in New York—lawyers, doctors, merchants, bankers, and manufacturers, including the trade we represent—and the committees appointed by them are now actively working.

All the readers of this journal are asked to contribute something toward the fund, of which Mr. Charles E. Root, at 78 Walker street, New York City, is Treasurer.

A Cheap Method of Producing Hydrogen Gas.

UNTIL recently the only method employed to produce hydrogen for experimental and sometimes balloon purposes has been by decomposing dilute sulphuric acid by iron or zinc. This method is slow, troublesome, and very expensive, and is not adapted, under any circumstances, to the production of hydrogen in quantities other than for laboratory purposes and small experiments. By this method it requires 28 pounds of iron, or 32 pounds of zinc, dissolved in 40 pounds of sulphuric acid, to produce only 1 pound of hydrogen, or about 200 cubic feet at 60° Fahr. and 30 inches barometer. Therefore the cost per pound could not be less than from 62½ cents to $1.25, according to the material used, without taking into consideration the cost of manipulating bulky and expensive apparatus necessary; or from $6.25 to $12.50 per thousand cubic feet.

A newly patented method can now produce this valuable gas in any quantity at under 12 cents per thousand cubic feet, or 2½ cents per pound. At this low price hydrogen fuel will become an important, practical, and commercial factor in the reduction of metallic oxides which, though common in nature, cannot now be converted into the metallic state by any application of carbon heat. Aluminum, calcium, magnesium, silicon, boron, and many substances are among those materials which, though most valuable in the arts, could not hitherto be obtained without the intervention of the expensive elements of sodium, potassium, chlorine, and fluorine.

The new process is based on the well-known reaction that when a current of steam is passed through melted iron it is decomposed, and sesquioxide of iron is formed at the expense of the oxygen of the steam, and the hydrogen is given off in the free and pure state. This can either be collected or at once used.

The oxide of iron left in the receptacle is then, while still hot, subjected to a current of hydrocarbon vapor from refuse petroleum or tar, which reconverts the oxide of iron into the metallic state for a fresh operation with steam to produce hydrogen again, without loosening, or indeed even moving, the iron in the receptacle. The hydrogen is thus obtained wholly at the expense of the petroleum or tar, which can be obtained at a cost of from 2 cents to 3 cents per gallon, and in some cases at even lower prices.

One gallon of refuse oil or tar, by this pretty reaction, is capable of yielding 500 cubic feet of hydrogen, or about 2½ pounds. This seems strange, as the refuse oil does not contain 2½ pounds of hydrogen, but it must be remembered that the carbon in the oil vapor performs its full share in reducing the iron oxide to the metallic state, to be again oxidized by the steam current, producing hydrogen.

The apparatus for carrying out this process is very simple. It consists of any number of crucibles, say six, of about 4 cubic feet capacity, and having covered tops. These are an article of commerce, and will hold from 16 to 18 cwt. of melted iron. They are each provided with two fire-resisting tubes, which descend through the cover to the bottom—one for the conveyance of the steam, and the other for the conveyance of the hydrocarbon reducing vapor in the alternating reduction of the iron oxide. These are set in the holes or arches of a glass pot furnace, either Siemens-Martin or other type. These pots, when at the necessary heat, are filled with molten iron, and steam from a boiler passed through the iron until its decomposition no longer takes place; or, in other words, until all the iron is converted into sesquioxide. The valve in the hydrogen connecting pipe, which proceeds from the cover of the crucible to the gasholder, is closed, and the branch escape pipe opening into the flue is opened. The hydrocarbon vapor produced from a spray gas-generating chamber (too well known to require description) is then conducted through the heated iron oxide until the whole is reduced again to the metallic state; in the meantime the carbonic oxide and vapor of water escaping by the branch pipe leading into the flue. By the closing of the branch escape pipe and the opening of the hydrogen collecting pipe, cutting off the hydrocarbon vapor and turning on the steam, the production of hydrogen again commences, and continues until the iron in the crucibles has again been fully oxidized.

It will be seen that the whole operation is automatic, with the exception of turning on and off the necessary connections, and the iron in the crucibles need never be moved or changed for years. The iron acts merely as a carrier, and does not waste. There is very little manual labor attending the working of the process, which can be alternating continuously.

A battery of 6 retorts of the size mentioned—3 always making hydrogen, and the other 3 undergoing reduction, and allowing two hours for the oxidation stage and two hours for the reduction stage—would produce about 50,000 cubic feet of hydrogen per hour. A 35-horse-power boiler would supply ample steam for the whole apparatus. The vaporizer for the hydrocarbon vapor production should have a capacity of converting 110 gallons of oil per hour.

By a modification already schemed out the retorts can be heated by petroleum blowpipes, which renders the whole manipulation quite automatic, beyond the attention to the valves and connections, and the pumping up of the liquid hydrocarbon and the water for the boiler.—After *The Gas World.*

Testing Diabetic Urine.

EVERY one familiar with the behavior of diabetic urine towards Fehling's solution is aware of the fact that in many cases the reagent causes a yellowish or greenish-yellow separation (it can hardly be called a precipitate), which refuses to settle for a long time, and sometimes does not settle at all. J. Seegen has recently proposed a method (*Wiener klin. Wochenschr.*, Nos. 6-8) by which this difficulty may be overcome. It is as follows:

Upon a filter in a funnel place some finely powdered animal charcoal (from blood) and pass through it 20 to 40 Cc. of urine. Pour the filtrate back until it comes through colorless. Next wash the charcoal with distilled water. The original colorless filtrate and the washings are used for the determination of the sugar. When the original urine contained only about 0.1 to 0 05 per cent of sugar, the reaction appears in the following manner. The original unfiltered urine decolorizes Fehling's solution and causes, at most, a dichroic, greenish-yellow turbidity. The decolorized, filtered urine, when treated with Fehling's solution and boiled, develops a yellowish turbidity, due to the formation of cuprous hydroxide. In the first wash water the same may still happen, but in the second and third a clean precipitate of red cuprous oxide is obtained, such as is formed in pure aqueous solution of sugar.

For *quantitative* purposes the method is applied as follows: About 50 Cc. of the urine are poured into a filter half filled with blood charcoal, and the filtrate poured back again until it passes entirely colorless. The charcoal is now washed with very small quantities of distilled water, the washings united with the filtrate, the liquid measured [it is best to bring it to the original volume of urine, filtered], and a portion then tested in the usual manner. The red cuprous oxide will now be found to separate in a normal manner. There is, however, a loss of sugar, since the charcoal retains some of the latter. Experiments have shown that this loss amounts to about 10 per cent.

Di-Iodo-Guajacol.

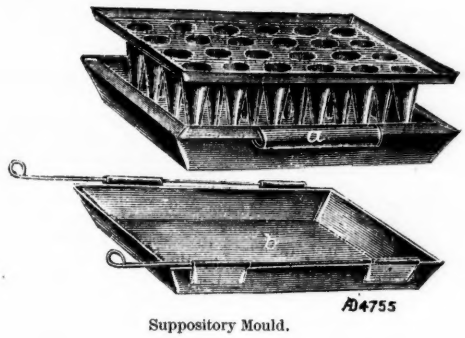
M. VICARIO reports on this new chemical in *Le Progrès Thérap.* (see *Rép. de Pharm.*, 1892, 56) as follows:

When guajacol is treated with an excess of soda solution a firm white mass, soluble in water, is obtained, which turns greenish and later violet when exposed to light and air. This product may also be obtained without using alkali in excess, if it is dissolved in an excess of guajacol and the latter separated by distillation in vacuo. The guajacol-sodium thus obtained is dissolved in water and treated with a solution, of iodine in iodide of potassium solution, as long as a precipitate is produced. The latter is brownish-red, soluble in alcohol and fatty oils, easily decomposed by heat, and melts on a water bath.

It is anticipated that this new compound, which is chemically allied to di-iodo-dithymol or aristol, will be found useful in the treatment of lung diseases.

SUPPOSITORY MOULD.

THE accompanying illustration represents a new form of suppository mould made of tinned iron. It consists of the mould proper and a tray into which the mould is placed, being fastened to it by pushing the iron rods through the guides and the corresponding lug, *a*, of the mould. The conical cavities in which the suppositories are cast are open at both ends. When the apparatus is to be used a sheet of rubber about 1½ Mm. thick is placed in the tray, the mould put on top of the rubber, and the rods pushed into place. The rubber serves to close the lower narrow orifice of the conical cavities. The mass having been properly prepared and cooled sufficiently to be yet in a condition to be poured, it is poured into the mould, and this then set into a refrigerator. When the suppositories are set the frame is taken apart, the superfluous mass projecting beyond the level of the casting surface cut off, and the suppositories removed by inverting and gently tapping the form. If any refuse to come out in this way, they may be pushed out by pushing against the small end.—After *Pharm. Zeit.* 4755]



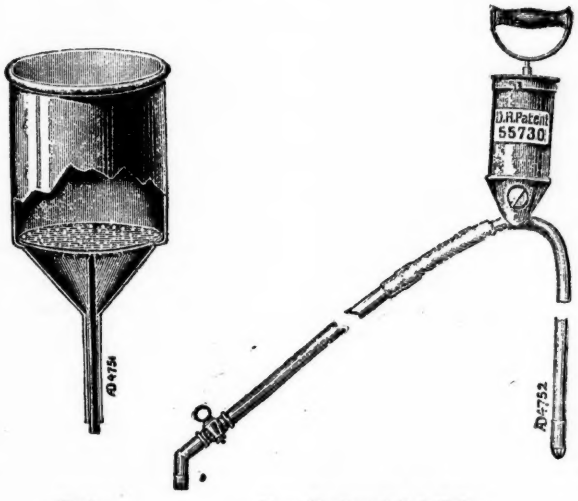
Suppository Mould.

A NEW SIPHON.

GREVE, HERZBERG & CO., of Cologne, Germany, have patented a new siphon, which is here illustrated.

When it is to be used the short leg is introduced into the liquid to be siphoned off, and the stopcock at the end of the longer leg turned off. The handle of the suction pump at the bend is now drawn up, which causes the interior of the siphon to be filled with liquid. On now opening the stopcock the liquid will continue to pass over.

To empty the siphon it is only necessary to depress the handle of the suction pump.—After *Ch. Zeit.*, No. 10. 4752]



Strainer. Greve, Herzberg & Co.'s Siphon.

Solanine.

AT a recent meeting of the French Academy of Medicine, M. Desnos read an essay on the use of solanine in stomachic disorders. He considers this drug to be capable of rendering important service in the same way as cocaine, chloroform water, bromides, etc. It is, however, not so effectual as morphine. But with persons addicted, or likely to addict themselves, to the morphine habit, it is useful to substitute another sedative, such as solanine. M. Desnos prescribes doses of 0.05 Gm. (⅞ gr.) half an hour before meals, made up in the form of pills. He had never given more than 15 Cgm. daily. When the pains are very keen it is, perhaps, more advantageous to administer the solanine in solution.—After *Chem. and Drugg.*

Ichthyol in Erysipelas.—Dr. Julius Fessler, of Munich, claims to have had excellent results in the treatment of erysipelas by means of ichthyol, internally and externally employed. It is, he says, inimical to the life of the streptococcus there, by curing the disease in a few days.

AN IMPROVED STRAINER.

THE strainer shown in the accompanying illustration has a removable perforated diaphragm resting upon a slight rim where the conical funnel begins. To the lower surface of the diaphragm a rod is fixed which projects beyond the orifice of the funnel tube, and by means of which the diaphragm may be lifted or adjusted.

According to the nature of the liquids to be strained, the strainer may be made of copper or other material.—After *Zeitsch. f. angew. Chem.*, No. 4. 4751]

A Simplified Method of Milk Analysis.

E. GOTTLIEB recommends the following modification of B. Roese's method of milk analysis, which is expeditious and said to yield accurate results:

Into a cylinder about 40 Cm. high, and graduated in ½ Cc., 10 Gm. of milk are introduced. The weighing is done in a small flask, in which the adhering film of milk (after its being poured into the cylinder) is easily determined, since this film is practically uniformeach time. To the milk in the cylinder there are added, first, 1 Cc. of 10-per-cent ammonia (specific gravity 0.960), the mixture being shaken; next, 10 Cc. of 95-per-cent alcohol, the mixture again shaken; and finally 25 Cc. of ether. The cylinder is now closed with a cork having a smooth, clean, and perfect face inside, and previously dampened with water so as not to absorb any of the liquid contained in the cylinder. On shaking the cylinder several times up and down themilk fat will readily dissolve in the ether. Next 15 Cc. of petroleum benzin are added, the whole once more shaken, and the cylinder then set aside during at least six hours, so that the contents may separate in sharp layers, the upper one being a solution of the fat in the ether and benzin, the lower one a transparent, clear solution of casein and milk sugar, while the phosphatesform a white sediment at the bottom. The volume of the upper layer is read off, and the largest portion of it transferred by a slender glass siphon into a small weighed flask. The ether and benzin are evaporated off at a gentle heat, the flask then heated during one or two hours in a drying oven at 100° C., cooled in a desiccator, and weighed.

The fat must be perfectly clear and be free from the odor of benzin.

The weight of the fat found in the fraction of the ethereal solution siphoned off furnishes, by a simple calculation, the total amount of fat in the 10 Gm. of milk.—*Landw. Versuchsst.*, vol. lx., 1.

Deodorant for Iodoform.—Eight drops of ethereal oil of coriander, thoroughly mixed with a drachm of iodoform, is said to cover the odor of the latter.

Formol.

THIS name was applied by Trillat to formaldehyde—CH_2O. It is obtained by oxidizing methylic alcohol by means of an ignited platinum wire. On the large scale, the vapors of methylic alcohol are passed over burning coals. They are caught in a receiver filled with water. The liquid finally contains, besides formaldehyde, some undecom posed methylic alcohol and some formic acid. This liquid is then rectified, and the final aqueous solution of the formaldehyde brought to a strength of 40 per cent. At a higher degree of condensation the compound becomes polymerized, trioxyformol or trioxymethylene being formed —$(CH_2O)_3$—which is a solid.

Formol easily combines with amines of the aromatic series. It is an excellent reagent for aniline, toluidine, etc. Thus a solution of aniline containing only 1 in 10,000 becomes turbid when formol is added. The same is the case with phenols.

Trillat reported, in 1890, that formol was a most powerful antiseptic and germicide. This has been recently disproven by Berlioz, who found, however, that urine and other easily decomposable liquids can be preserved by its addition.

It is, however, unsuited for the antiseptic treatment of wounds.

Phosphorous Oxide.

A VERY interesting account has appeared in *Nature* (xiv., 446) of the results obtained in an investigation of the lower oxide of phosphorus, corresponding to phosphorous acid, with which Prof. T. G. Thorpe and D. A. G. Tutton have been engaged during the last three years. It appears that the description given in chemical works of the substance represented by the empirical formula P_2O_3 is incorrect, and that it is a white, crystalline or wax-like substance. It melts at 22.5° C. to a clear, colorless, mobile liquid. The specific gravity in the solid state at 21° is 2.135, as compared with water at 4° C.; in the liquid state at 24.8° the specific gravity is 1.9358, so that there is a contraction of about 9 per cent in passing from the liquid to the solid state. Phosphorous oxide is very volatile both in the solid and the liquid state; it boils at 173.1° C., and can be distilled without alteration in an atmosphere of nitrogen. The vapor has a very characteristic odor, and its density indicates that, like the analogous oxides of arsenic and antimony, the composition and molecular weight of phosphorous oxide are to be represented by the double molecular formula P_4O_6. The value found for the specific volume is 130.2. Deducting from this number the specific volume due to the 6 atoms of oxygen ($46.8 = 7.8 \times 6$), there remains 83.4 for the specific volume of the 4 atoms of phosphorus, or 26.9 for that of 1 atom; which is the specific volume of phosphorus in the free state. This is a relation of interest in connection with the fact that the molecule of phosphorous oxide contains 4 atoms of phosphorus, just as the molecule of free phosphorus does. Phosphorous oxide in the liquid state has a remarkably low power of refracting light, offering a strong contrast to the high refractive power of phosphorus. In the wax-like, solid form it is remarkably sensitive to light, turning red on exposure to bright sunshine for ten minutes, and becoming quite dark red after half an hour, the color being due to the formation of a very small proportion of the red modification of phosphorus. Isolated crystals obtained by sublimation in vacuo appear to be unaffected by light, but when they are melted and converted, by sudden cooling, into the wax-like form, that becomes red on exposure to daylight. It has not yet been ascertained whether this coloring is due to decomposition or to some admixture of free phosphorus. When heated above 210° phosphorous oxide begins to decompose and darkens, until at 300° it is quite red. At 400° it is completely decomposed into phosphorus and pentoxide, according to the equation $2P_4O_6 = 6P_2O_5 + 8P$. Phosphorous oxide combines with oxygen at the ordinary temperature, giving rise to evolution of light; when the temperature is raised to 70° C. combustion takes place, which can be at once reduced to phosphorescence by diminishing the pressure. When thrown into oxygen warmed to about 50° C the oxide burns to pentoxide with a brilliant flash. With chlorine, phosphorous oxide reacts violently, yielding phosphorous oxychloride, $POCl_3$, and metaphosphoryl chloride, PO_2Cl. With bromine it yields analogous products. With iodine it reacts slowly, a solution in carbon bisulphide yielding, when heated in sealed tubes, orange-red crystals of P_2I_4. With sulphur the oxide forms a crystalline addition-compound of the empirical formula $P_2O_3S_2$, a pale-yellow solid melting at about 102° and boiling without decomposition at 295°. Its vapor density points to the double formula $P_4O_6S_4$. . . .

One of the points of interest in regard to phosphorous oxide is its physiological action and the connection it has with the terrible disease of the lower jaw from which persons engaged in the manufacture of matches occasionally suffer. It would appear that this deplorable action is directly traceable to the vapor of phosphorous oxide, which is largely formed by the oxidation of phosphorus. The advanced knowledge now obtained of the chemical history of this compound may perhaps afford means of adopting additional precautions against its deleterious influence.—After *Pharm. Journ.*

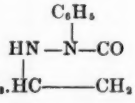
A New Formation of Antipyrine.

L. KNORR and P. DUDEN have announced a new method of producing antipyrine.

On warming a mixture of equal molecules of crotonic acid and phenylhydrazine in an oil bath to about 115° C., a reaction begins which is accompanied by the evolution of aqueous vapor. The temperature is then raised to 125° C., and when the reaction becomes sluggish is gradually raised to 160° C., where it is kept for a short time. The end of the reaction is recognized by the fact that a small sample of the mass, when rubbed with a glass rod, easily solidifies. The two bodies have now formed a condensation product:

$C_4H_6O_2$	+	$C_6H_8N_2$	=	H_2O	+	$C_{10}H_{12}N_2O$
crotonic acid		phenyl-hydrazine		water		

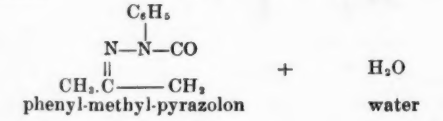
The new body is named by the authors "phenyl-methyl-pyrazolidon," and is regarded as having the following structure:



It crystallizes in small, white needles, melting at 84° C., is easily soluble in alcohol, chloroform, toluol, and glacial acetic acid.

By oxidizing agents it is converted into phenyl-methyl-pyrazolon, which is the mother substance of antipyrine.

Adding 1 atom of oxygen to the formula above outlined, we obtain:



phenyl-methyl-pyrazolon		water

—After *Pharm. Centralh.*

Detection of Oil of Turpentine, etc., in Essential Oils.

POTASSIUM bitartrate (20 Gm.) is neutralized with manganous carbonate (5 to 6 Gm.), and dissolved in 1 L. of water. Five Cc. of the essence to be tested, 3 Cc. of the above solution, and 5 drops of ammonia solution (specific gravity 0.925) are well shaken together in a test tube, which is then placed in a water bath and a current of air passed through the contents for thirty seconds. The tube is then removed, its contents well shaken and allowed to separate. With the exception of the oils of lemon and bergamot, which are colored dark-brown, the majority of pure essences are but faintly tinged with yellow, whereas the addition of turpentine determines a coloration varying from brown to intense brown-black in the supernatant essence.—L. CRISMER in *Bull. Soc. Chim.* and *Journ. Chem. Soc.*

GAS-DRYING APPARATUS.

THE gas-drying apparatus heretofore in use suffered from the drawback that their inlet and outlet necks had to be generally closed with stoppers carrying glass tubes, which latter were then connected by glass tubing. The stoppers frequently caused trouble by leakage or other causes. Taueber has now devised a form of apparatus which overcomes this drawback by fusing the glass tube on to the drying cylinders and thus avoiding the use of a perforated stopper altogether.

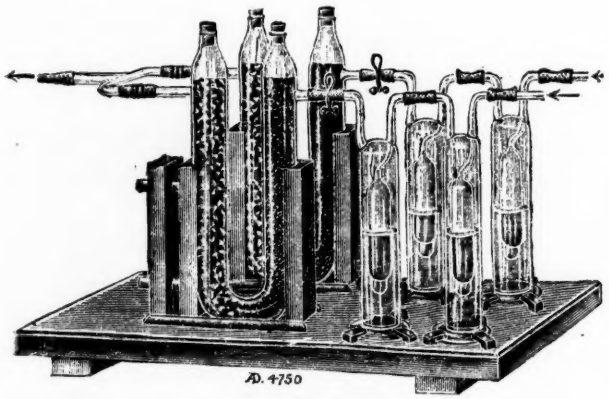
For drying air, oxygen, etc., he uses a battery of 4 gas-washing flasks (see cut) and two U-tubes. The washing flasks have a capacity of about 250 Cc., and are charged with liquids retaining moisture (concentrated sulphuric acid, etc.), and other liquids, according to the nature of the gas to be dried or the object of washing. The two U-tubes are charged half with granulated calcium chloride and half with soda lime.

The gas is made to pass in the direction of the arrows. —After *Zeitsch. f. angew. Chem.*, No. 4. 4750]

Estimation of Uric Acid.

BAYRAC recommends (in *Compt. Rend.*, 110, 352) the estimation of uric acid by the volume of nitrogen it produces when decomposed with an alkaline hypobromite. For this purpose the uric acid must be isolated and separated from urea and creatinine, which the author regards as the only constituents of the urine yielding noticeable quantities of nitrogen with the above-mentioned reagents. His directions are as follows:

Evaporate 50 Cc. of the urine on the water bath, strongly acidulate the residue so that the uric acid may be precipitated, and then wash the precipitate with alcohol, which will remove urea and creatinine. Dissolve the residual uric acid in strong, hot (90° to 100° C.) solution of soda, and add this, best in a nitrometer, to 15 Cc. of hypobromite solution. The uric acid will thus be decomposed, nitrogen being evolved as gas. This method is said to equal in accuracy those usually employed—namely, determination by precipitating it with hydrochloric acid, or as acid ammonium urate. [One Cc. of nitrogen corresponds, theoretically, to 0.00378 Gm. of urea.]

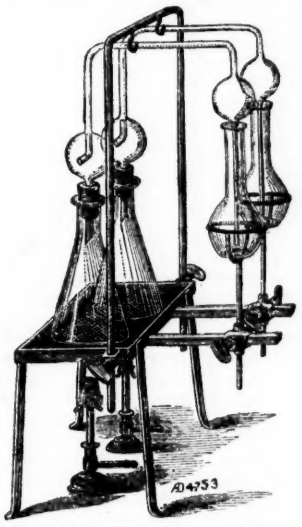


Gas-drying Apparatus.

Chronic Arsenical Poisoning.—A report appeared in the *Lancet* (March 5th) of an example of chronic arsenical poisoning on a large scale occurring at the County Asylum, Berry Wood, England. Within a few months nearly every nurse on the staff had been under medical treatment for general ill health. Drugs were of no avail, but a holiday invariably produced a good effect. Attention was at length attracted to some green curtains used in the nurses' rooms as covering for dresses, etc. On examination these were found to be impregnated with a large proportion of arsenic. After their removal and a thorough ventilation of the rooms the symptoms disappeared and have not since returned.

APPARATUS FOR KJELDAHL'S NITROGEN DETERMINATION.

KJELDAHL'S method of nitrogen determination—consisting of the conversion of the nitrogenized substance into ammonia by treating it first with concentrated sulphuric acid and then oxidizing with permanganate, and subsequently distilling off the ammonia and receiving it in a measured quantity of volumetric acid—is gradually extending even to pharmaceutical assaying. We have recently been consulted regarding the best form of apparatus, as there are various modifications. While we



Apparatus for Nitrogen Determination

have ourselves made shift with such laboratory utensils (stands, holders, etc.) as we had, and merely procured the necessary glassware, we would advise those who wish to employ Kjeldahl's process regularly to procure the whole apparatus as usually put together and sold for this purpose. Among the smaller sets which we have recently noticed is one very neatly and compactly arranged by Ehrhardt & Metzger, of Darmstadt (see cut). This may be procured through importers of chemical apparatus. 4753]

Estimation of Small Quantities of Strychnine.

AT a meeting of the Chemists' Assistants' Association, held at London on March 17th, Mr. R. H. Davies presented a modification of the old method of testing for strychnine with potassium bichromate and sulphuric acid, which had been first worked some years previously by the lecturer, in conjunction with Mr. Oscar Echenstein, for estimating minute quantities of strychnine. Mr. Davies described the usual method of applying the test on a white slab, treating the bichromate and strychnine separately with sulphuric acid, and then drawing the two together, when the characteristic play of colors is produced. A more efficient method, as he demonstrated, is to make a very dilute solution of potassium bichromate in strong sulphuric acid, and then add the strychnine in solution to this in a test tube, when the reaction can be easily observed. The first colors produced soon disappear, giving place to a reddish-orange which is fairly persistent; and it was by means of this color they endeavored to estimate the quantity of strychnine under examination by a process similar to Nesslerizing. Mr. Davies showed a series of these tests, comprising the plain solution of bichromate in strong sulphuric acid, and similar quantities of the solution with $\frac{1}{2500}$, $\frac{1}{1000}$, and $\frac{1}{500}$ gr. of strychnine added. A very distinct difference between them was observable, and it was evident that it was quite practicable, by comparing with a solution of strychnine of known strength, to get an approximate idea of the amount of the alkaloid present.—After *Chem. and Drugg.*

Impurities in Chloroform.

STATEMENTS have been made which ascribe injurious effects to impurities in chloroform, but I am not aware of a single instance where these effects have been traced to their presence. In the absence of reliable information regarding the chemical or physiological action of the substances, other than chloroform, which are produced with it, such statement can only be based on theory. It cannot, however, be denied that all chloroform is not so free from impurity as it should be, and a recent examination of commercial samples shows that in some cases there is great room for improvement.

The purity of chloroform cannot be determined by any one test. Those of the Pharmacopœia enable us to ascertain its purity up to a certain point, but beyond that there has been no attempt made to insist on a purer preparation or to provide means by which smaller quantities of impurities not recognized by the British Pharmacopœia tests may be detected and separated.

Before giving a process for recognizing and separating impurities passed over by the British Pharmacopœia tests, I would like to point out that these impurities have boiling points both above and below that of pure chloroform; that as a rule they possess very strong characteristic odors which, even in a very dilute form, can be more readily detected by the nose than by any known chemical reagent; and further, that if the impurities found in chloroform are dangerous to life, there is a greater likelihood of the more volatile ones doing mischief than the less volatile, seeing that the former will evaporate and be inhaled with the chloroform, while the latter are to a very large extent left behind when the chloroform has evaporated.

At present no process is known by which the total impurity in chloroform can be determined. By careful fractional distillation, however, and dividing the sample under examination into two fractions, one of 10 per cent, the other of 75 per cent, and a residue of 15 per cent, we obtain both the more and the less volatile impurities in a concentrated form. Unfortunately, we can only say of the 10-per-cent fraction that it does or does not, in a greater or less degree, possess the smell peculiar to impurity. We can also say this of the 15-per-cent residue, and in addition collect and weigh the bulk of the non-volatile impurity by slowly evaporating, with precautions to exclude dust, at a temperature of from 80° to 90° F.

I do not claim that the results obtained by this process give the total quantity of impurity present in the sample, but I think they are of a comparative value and enable us to reject inferior chloroform which at present passes the Pharmacopœia standard.

Seven samples of commercial chloroform, which were found to answer all the British Pharmacopœia tests, were treated in the manner just described, and gave the following results:

TABLE I.

No.	10-per-cent fraction.	15-per-cent residue.	Residue at 80°-90° F. Parts by weight.
1	No bad smell.	No bad smell.	1 part in 1,946,100.
2	" " "	" " "	1 " 487,500.
3	" " "	" " "	1 " 487,500.
4	" " "	" " "	1 " 487,500.
5	" " "	" " "	1 " 300,000.
6	" " "	" " "	1 " 121,875.
7	" " "	" " "	1 " 243,750.

It is evident from these results that the British Pharmacopœia tests permit a preparation containing sixteen times more impurity than is found in one, and four times more than we obtain from others, to pass into the market and take its place there on an equality with them. They also—and I consider this a very important point—supply material which proves that chloroform of equal purity can be, and is, prepared from other substances than duty-paid alcohol, for the second, third, and fourth samples were prepared, not specially, but in the ordinary course of manufacture, from alcohol, acetone, and methylated spirit, and are found to be practically identical.

Six other samples, some said to be of British Pharmacopœia purity, and others laying claim to chemical purity, were subjected to the same treatment as the preceding seven, and gave results as under:

TABLE II.

No.	10-per-cent fraction.	15-per-cent residue.	Residues of 80°-90° F. Parts by weight.
1	Bad smell.	Very bad smell.	1 part in 57,352.
2	" "	No bad smell.	1 " 324,999.
3	Very bad smell.	Very bad smell.	1 " 243,750.
4	Slight smell.	Bad smell.	1 " 121,875.
5	" "	" "	1 " 324,999.
6	" "	" "	1 " 390,000.

None of the above samples in their original form were found to answer the British Pharmacopœia tests, but the ordinary consumer would pass the bulk of them as of British Pharmacopœia purity; he could not fail, however, to detect the bad smell either in the residue or the 10-per-cent fraction, which points, I think, to the absolute necessity for some more exacting test being provided.

This process, which may be considered an extension of the present bad-smell-and-residue test of the British Pharmacopœia, requires about 130 Cc. of the sample and from two to three days for each experiment; but I have no doubt the time could be shortened.

It is not advisable to raise the standard of purity beyond the possible reach of manufacturers, but I think chloroform intended for anæsthetic purposes should be expected to stand more exacting tests than those of the present Pharmacopœia.

The temperatures at which 85 per cent of each sample distilled over were noted; the average range of the finer ones was 1.65° C., and that of the less pure 2.04° C., which gives a difference of 0.39° C. in favor of the purer preparations; this is a small difference, and as some of the bad samples distilled over below the average range of the finer ones, I am inclined to think that the boiling point is not of much value for detecting impurity in commercial chloroform.—D. BROWN, F.C.S., in *Pharm. Journ.*, March 19th.

The Creosote Cure in Germany.

A PHYSICIAN residing in the neighborhood of Karlsruhe has lately initiated a system of cure by creosote which is making him exceedingly popular throughout Southern Germany. The practitioner in question administers creosote in very large doses, mostly in solution (milk being the usual vehicle); and likewise, for internal use, creosote in combination with lysol, iodide of potassium, and salicylate of sodium. The maximum dose of the German Pharmacopœia for creosote is 0.2 Gm., and a prescription may only be refilled without express medical authority if the dose does not exceed 0.1 Gm. The doctor, however, places his faith (and his patients strongly support him) in much more heroic doses—100 Gm. each of creosote and tincture of gentian, 60 drops to be taken four times daily, being quite a common prescription with him.—*Chem. and Drugg.*

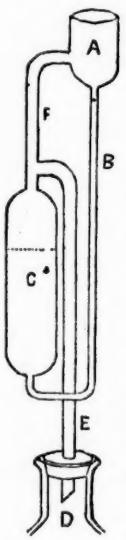
On the Estimation of Milk Sugar in Milk.

IN determining sugar of milk in the usual manner by Fehling's solution, the difficulty is encountered that the filtrate (from the coagulated milk) is usually too opaque for titration. A. H. Gill recommends (*Journ. anal. Chem.*, 1891, 652) to mix 25 Cc. of the milk with 15 Cc. of milk of alumina and 0.5 Cc. of 25-per-cent acetic acid, to stir, then to heat five to seven minutes over a water bath at 85° C., to add 100 Cc. of water, and to heat again during ten minutes in boiling water under constant stirring. The liquid is then allowed to become cold and to deposit, and the clear portion decanted through a filter into a 500-Cc. flask, the precipitate being as much as possible prevented from getting on to the filter. The operation of boiling and filtering is repeated three times, and the filtrate finally made up to 500 Cc. It is now in a condition to be titrated with Fehling's solution. The "milk of alumina" is obtained by precipitating 125 Cc. of ammonia alum with ammonia at a boiling heat, washing the precipitate by decantation, and finally adding water to make the mixture of precipitate and liquid measure 1,000 Cc.

A NEW EXTRACTION APPARATUS.

A PAPER describing a new extraction apparatus was recently presented to the Society of Public Analysts of London, which we reprint here after the *Analyst:*

Some years ago I devised a form of fat-extraction apparatus for solids on the principle of upward filtration, but, as it presented no advantages over the now well-known Soxhlet form, I did not deem it desirable to publish an account of it. A few months ago, however, I had occasion to extract some liquids with ether, and it occurred to me that the apparatus might be pressed into service for that purpose; and as it answered all my expectations, I modified it somewhat in form, and have now used it in my laboratory for some six months or so. As it has been very serviceable to me, I venture to give a description of it to the Society, in the hope that it may be useful to others—more particularly as it is specially adapted to the extraction of fat by the Schmid process.



The working of the apparatus will be easily understood by a glance at the accompanying diagram. The liquid to be extracted is poured into cup A so that the whole of it will run down the tube B into the bulb C, which should not be more than about two-thirds full. About 5 Cc. of ether are poured into a tared flask, D, attached to the tube E by a cork in the usual way. The bulb C is then completely filled by adding ether carefully to the cup A, and the whole is adapted to an upright condenser, as with a Soxhlet tube. When the flask D is immersed in hot water, the ether vapor passes along the tubes E and F, is condensed in the Liebig condenser and runs back by B into C, and rises drop by drop through the liquid to be extracted. The process is, therefore, continuous and automatic, and may be applied to any two non-miscible liquids, provided the solvent be the lighter.

To the public analyst it will, I apprehend, be chiefly of value because of its applicability to the extraction of fat from milk and its products, especially when treated by the Schmid process. For this purpose 10 Cc. of the sample under examination are measured or weighed into a little beaker, 10 Cc. of hydrochloric acid added, and the mixture gently boiled, with constant stirring, for two or three minutes. When cold, the mixture is poured into the apparatus as described, and the beaker washed with ether and the washing added. The apparatus is then put together, and the extraction allowed to proceed for an hour or so, when the whole of the fat will be found in the flask D. As there is only a small quantity of ether with the fat, the flask may be placed directly into the water oven and the contents weighed to constancy in the usual way. The whole operation, so far as actual work is concerned, can be performed very rapidly and with great ease and accuracy; the only error entering into the process being, so far as I have been able to ascertain, the slight solubility of some caramel-looking matter, which contaminates the fat to the extent of a milligramme or two.

So far as my experience goes, it appears that the extraction of the fat is more rapid the more perfectly the milk and acid have been boiled together. Thus, when boiled for three minutes, practically the whole of the fat is removed in half an hour; whereas when only boiled for two minutes, in one instance 31 Mgm. remained unextracted at the end of the time; while when boiled for one minute, only about two-thirds of the total fat was extracted, the remainder being removed with difficulty. It would appear, therefore, that to readily extract the whole of the fat it is necessary to boil the milk and acid together for some time, say three minutes.

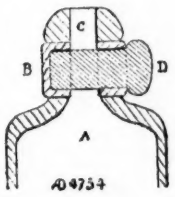
The following results, obtained with four different samples of milk, and taken in this order, will give some idea of the accuracy of the process under varying conditions:

	"Schmid," Boiled with HCl for:				"Adams" Method.
	1 minute.	2 minutes.	3 minutes.	5 minutes.	Extracted 3 h'rs.
1	Extracted 3 hours.	....	2.60	....	2.49
2	" ½ hour.	3.91	4.49	....	...
	" 1 hour.	4.21	4.53	...	....
	" 1½ hours.	4.46	4.56	....	4.51
3	" ½ hour.	2.61	2.69	....	...
	" 1 hour.	2.75	2.75	....	....
	" 2 hours.	2.78	2.80	...	2.78
4	" ½ hour.	2.31	...	3.46	...
	" 1 hour.	3.33	...	3.51	....
	" 1½ hours.	3.49	....	3.56	....
	" 2½ hours.	3.61	....	....	3.57

The determinations by the Adams process were made by the use of Schleicher & Schüll's fat-free paper, and the extraction was continued for three hours. 4847]

A NEW BOTTLE STOPPER.

A PATENT has been granted to George H. Ellis, of London (4 Water Lane, Great Tower street), for a new bottle stopper which is likely to prove exceedingly useful for many purposes, particularly for holding liquids charged with gas, of which only a portion is to be abstracted at one time, such as carbonated mineral waters, citrate of magnesia, etc. The illustration shows the peculiar features of the new arrangement, which consists, in fact, in the insertion of a glass stopcock into the neck of a bottle, which is of such a shape that it can hold the stopper securely.



A is the body of the bottle, B the transverse socket into which the stopper fits, C is the ordinary vertical orifice, and D the stopper, which may be screwed, or ground, or of any desired form. 4754]

Behavior of Aluminum towards Mercury.

HELBIG makes the following communication on this subject to the *Pharm. Centralhalle:*

If a little mercuric chloride (or other mercuric salt) is placed upon a piece of metallic aluminum, white, hair-like formations will at once be seen to rise from the surface. These grow during a short time considerably (several centimetres during about fifteen minutes). They are generally so fine that they can be blown away. To succeed with this experiment the aluminum must be at least moderately clean.

The reaction may be employed for purposes of amusement. A very handsome result is obtained if the recently introduced aluminum penholders, having the form of birds' feathers, are coated with a strong solution of mercuric chloride. This will cause apparently additional feathers to grow out of the metallic one.

The reaction may also be used as an example of the inconsistency of the assumed law that bodies act upon each other only in a liquid condition, since the same phenomenon is observed no matter what liquid is used for dissolving the mercuric salt. On the other hand, when dry mercuric chloride is applied to metallic aluminum, the formation of "hairs" occurs even more rapidly than when solutions are employed.

The nature of the reaction is this: First an aluminum amalgam is formed. Next the aluminum dissolved by the mercury is oxidized by the air and converted into alumina; this is shown by the fact that when a piece of aluminum is put into a solution of mercuric chloride, metallic mercury is separated. On the other hand, the "hairy" feathers are not formed if the reaction is attempted with exclusion of air.

Preparation of Mercurial Ointment.—According to Borntraeger, a small amount of oleate of mercury is exceedingly efficient in the extinguishment of mercury during the preparation of mercurial ointment.

New Method of Standardizing Volumetric Sulphuric Acid.

SINCE the gravimetric method of determining the quantity of absolute acid in any sample of sulphuric acid is somewhat tedious, owing to the eagerness with which barium sulphate carries down with it barium chloride, etc., Dr. M. Weinig prefers other methods of ascertaining the titre of this acid. Among others he has found the following to be very reliable and simple.

This method is based on the fact that sulphate of ammonium crystallizes in an anhydrous condition, melts at 140° C., and then decomposes. It can be dried, without loss, at 115° to 120° C.

A certain measured quantity of the sulphuric acid, approximately diluted to near the strength required, is transferred, by means of a pipette, into a tared platinum capsule.

To this is then added a quantity of ammonia water sufficient to have a slight excess of the latter present. A large excess is inadvisable, since the liquid is then apt to "spray" during evaporation. The author advises to use only about 0.5 Cc. of ammonia in excess. The resulting solution is then evaporated on a water bath, dried at 115° to 120° C. during half an hour, the capsule cooled in the desiccator, and then weighed.

For calculating the amount of absolute sulphuric acid, or of ammonia, or of nitrogen corresponding to the amount of ammonium sulphate thus found, the following factors are used:

Found.	Sought.	Multiply with
$(NH_4)_2SO_4$ (ammonium sulphate)	H_2SO_4	0.74196
	$2NH_3$	0.25804
	N_2	0.21253

—After *Zeitsch. f. anal. Chem.*, No. 7.

[*Note by Ed. Am. Drugg.*—A simple and rapid method of hitting the right degree of supersaturation of the sulphuric acid is the following:

Into the platinum capsule introduce exactly 50 Cc. of the approximately adjusted dilute sulphuric acid. Add to it a few drops of methyl orange solution (1 Gm. in 1,000 Cc.), and then enough water of ammonia until, after stirring, the rose-red color of the liquid has changed to yellow. The ammonia will then be present in slight excess. Rinse the glass rod with distilled water, evaporate the liquid to dryness, dry at 115° to 120° C., and weigh.]

Separation and Estimation of Silver and Gold by Hydroxylamine.

PROF. A. LINER, of Vienna, recommends the hydrochlorate of hydroxylamine (or a crude form of it sold in the market as "Reducing Salt") for the purpose of separating silver and gold, chiefly for recovery of these metals from photographers' wash waters.

In the case of silver residues, he recommends to convert the silver first into chloride, then to wash it, place it in a beaker, and to add to it a piece of caustic potassa and some crystals of hydroxylamine hydrochloride. The beaker is to be rather capacious, and to be covered with a watch glass, as there is much effervescence. The contents are finally heated to boiling, when the reduction is complete. If cyanide of silver was present, the reduction is more difficult. A larger amount of caustic alkali is required, and the first filtrate, which still contains silver in solution, should be evaporated to dryness in presence of a little more hydroxylamine hydrochlorate. On now treating with water, all but metallic silver will go into solution.

In the case of gold, the addition of an alkali is not necessary. To show how the reaction proceeds, the following experiment is detailed:

0.4012 Gm. of crystallized chloride of gold and sodium ($AuCl_3KCl$) were dissolved, in a porcelain capsule, in a little water, and a crystal of hydroxylamine hydrochlorate added. The solution became colorless within a few seconds. [We find that *heat* must be applied.—ED. AM. DRUGG.] The separated gold was washed with boiling water by decantation, and after being dried, weighed 0.2086 Gm., or 51.99 per cent. Theory requires 52.05 per cent. The method is, therefore, sufficiently exact.

Sixteen-per-cent Cinchona.

TWO samples of cinchona taken from trees in the Government gardens at Rioeng Goenoeng, Java, were recently analyzed and found to equal respectively 12.66 and 16.54 per cent of sulphate of quinine. These are exceedingly high percentages, and the private planters in Java, who buy their cinchona seed from the Government, want to know why it is that the best seeds ever supplied them yield trees of no higher quinine value than 7 to 8 per cent, with the exception of the seed from one Government plantation, that of Gombong, from which trees yielding 13.25 per cent have been raised. It is also pointed out that the richest Government cinchona bark hitherto brought to market has not exceeded 9½ per cent of sulphate of quinine, and there seems to be an unpleasant impression that the present director of the Java Government gardens (who is soon to be superseded) has systematically kept the richest barks from the market and the best seed out of the hands of private cultivators. —After *Chem. and Drugg.*

On the Alkaloids of True Aconitum Napellus.

PROF. DUNSTAN and MR. JOHN C. UMNEY have just reported on the alkaloidal constituents contained in the roots of the true *Aconitum Napellus*. The plants were grown by Mr. E. M. Holmes at the instance of the British Pharmaceutical Conference. The process used for the extraction of the alkaloids was such as to preclude the possibility of the occurrence of hydrolysis or other decomposition of the alkaloids. It consisted in percolating the roots, dried at low temperature and finely powdered, with cold rectified fusel oil (B. P. 100° to 132°), and extracting the alkaloids from the solution by agitation with water acidified with 1 per cent of sulphuric acid. Resin was removed by extracting the acid solution with chloroform, and the liquid was then made just alkaline with dilute ammonia and extracted with ether, which removed a considerable quantity of alkaloid, but left in solution a further and smaller quantity, which was subsequently dissolved out by agitation with chloroform.

The *alkaloid soluble in ether* was obtained as a gum-like mass incapable of crystallization. By conversion into hydrobromide it was separated into a crystallizable and uncrystallizable salt.

The crystalline hydrobromide was identified as the salt of aconitine, the crystalline and highly toxic alkaloid already described by one of the authors and Dr. W. H. Ince. The rotatory power of the pure hydrobromide in aqueous solution was ascertained to be $[\alpha]_D - 29.65$, a result which agrees well with that recorded in the paper above referred to. As some doubt exists with reference to the solubility of aconitine in water, it was carefully determined with this pure specimen. The mean of two determinations was 1 Gm. in 4,431 Gm. of water at 22° C. Jürgens had previously recorded the far greater solubility of 1 in 745 at the same temperature.

The non-crystalline hydrobromide furnished an alkaloid resembling a gum in appearance. It dissolved in ether and alcohol, but only sparingly in water. The aqueous solution was alkaline to litmus and was very bitter, but it did not give rise to the tingling sensation so characteristic of aconitine. The base could not be crystallized, neither could the hydrochloride, sulphate, and nitrate prepared from it. The aurochloride is also amorphous. Owing to the circumstance that a crystalline compound of this base could not be obtained, it was difficult to gain conclusive evidence of its homogeneity.

The properties recorded above show that it is not aconine, or the base called by Wright and Luff picr-aconitine, which readily afforded crystalline salts. These characteristic properties belong to an alkaloid of which a full account will be given hereafter, considerable progress having already been made in the most difficult task of isolating it in a pure state. We propose to assign to it the name of *napelline*, which was given to the alkaloid now known as pseudaconitine, and afterwards by Hübschmann to a substance which the work of Wright and Luff showed to be a mixture chiefly composed of aconine. The *napelline* obtained as described above is probably associated with another amorphous base,

about which we have at present little information to give, beyond the fact that neither it nor its salts appear to crystallize.

The *alkaloid soluble in chloroform* was proved to be identical with *aconine*, the amorphous base which results from the hydrolysis of aconitine. On combustion it afforded numbers corresponding with those deduced from the formula $C_{28}H_{41}NO_{11}$. Its molecular weight, determined by Raoult's method, also corresponded with this formula.

The roots of the true *Aconitum Napellus* certainly contain three alkaloids, one of which is crystalline, viz., *aconitine*, two being amorphous, viz., *napelline* and *aconine*. Indications have been obtained of the presence of a *fourth* alkaloid which is amorphous and closely resembles napelline.

The authors found that the juice expressed from the roots contained a large proportion of amorphous bases but very little aconitine, the greater part of which remains in the root and may be extracted, together with the remainder of the amorphous alkaloids, by exhausting with amyl alcohol. The total quantity of amorphous bases amounted to more than twice that of aconitine.

The physiological action of all these alkaloids is being investigated. The results so far obtained point to the conclusion that crystalline aconitine is by far the most toxic of the alkaloids contained in *Aconitum Napellus*.—*Pharm. Journ.*, March 5th.

Notes on Essential Oils.*

Oil of Anise Bark.—This is obtained from a bark resembling the massay bark, and exported from Madagascar. Its source is, probably, *Illicium parviflorum*. The oil exists in it to the amount of 3.5 per cent. It has an odor resembling that of safrol and estragon. It consists mainly of the isomeric, liquid anethol (Eijkman's methyl-chavicol), and a little ordinary anethol.

Oil of Bergamot.—On investigating the constitution of oil of lavender, Schimmel & Co.'s chemists discovered the fact that this oil contained an acetic ester (or compound ether) which had a remarkable similarity in odor to oil of bergamot. On examining the latter oil, it was found that the before-mentioned ester existed in it to the amount of about 40 per cent. On further investigation it was ascertained that the basylous or alcohol radical of the compound ether is a body previously discovered by Semmler in oil of linaloe, and denominated *linalool*. The same ester has also been discovered by Schimmel & Co. in oil of petits grain, and will, no doubt, be met with elsewhere.

Oil of Coriander.—Schimmel & Co. confirm the report of Semmler, who found the chief constituent of this oil to be an oxygenated body ($C_{10}H_{18}O$), named by him coriandrol. It is accompanied by about 5 per cent of right-polarizing pinen.

Oil of Cypress.—This oil had been recommended in a German medical journal as an efficient remedy for whooping cough, to be administered by having the patients inhale its vapor. This has caused a complete exhaustion of present stocks.

Oil of Guajac Wood.—This is obtained from a species of South American guajac wood not heretofore in the market. The yield was 6 per cent. At the ordinary temperature it is crystalline, at a high temperature viscid, and has an odor of tar and violets. The crystalline oil possesses the chemical properties of an alcohol.

Oil of Lavender.—This contains only small quantities of constituents of low boiling point. Cineol, which occurs in the oil of *Lavandula spicata*, could not be found in the oil of garden lavender; neither does the latter contain camphor. The chief constituent is an alcohol ($C_{10}H_{18}O$)—subsequently identified as linalool—and its acetic ether (ester). [See above under Oil of Bergamot, and next item.]

Oil of Linaloe.—The chief constituent of this oil is linalool, originally discovered by Semmler. This is now put on the market in a pure form by Schimmel & Co. It is a nearly colorless liquid, easily soluble in alcohol, of specific gravity 0.878 at 15° C, boiling at 197°–198° C., and polarizing +2°. On oxidizing this alcohol, an aldehyde of the composition $C_{10}H_{16}O$ is obtained which is identical with *citral* (Semmler's geranium aldehyde).

Oil of Cloves.—Thoms' method of determining eugenol has been tested by Schimmel & Co., and found reliable to within 1 per cent. The firm thinks the test too circumstantial for pharmacopœial purposes, but advises to introduce eugenol in place of the oil.

* From the April Report of Schimmel & Co., Leipzig.

Note on Oil of Peppermint.

G. ANDRES and A. ANDREEF have recently investigated the properties and composition of Russian oil of peppermint, on which they report in detail in the *Berichte der Deutsch. chem. Ges.* (1892, 609). From this report we select some portions which are of interest to pharmacists.

Oil of peppermint has been repeatedly investigated, but, while the oxidized constituents—viz., menthol ($C_{10}H_{20}O$) and menthon ($C_{10}H_{18}O$)—have been thoroughly studied, the hydrocarbons existing in it are but imperfectly known. It was the chief aim of the authors to investigate these terpenes.

By way of comparison they also examined a number of other oils, regarding which they report the following data. These refer to samples procured by them in commerce. Of course the figures do not apply to the several classes in general, but only to the particular samples examined:

Kind of Oil.	Boiled at	Spec. grav. at 15° C.	Rotation (D).
German	160°–232°	0.910	– 24.59°
English	160°–220°	0.901	– 27.70°
American	175°–233°	0.912	– 30.20°
Russian.			
From fresh herb	165°–225°	0.915	– 17.13°
From dried herb	165°–225°	0.912	– 18.26°

It will be seen that there is much difference between these oils. Still more different is Japanese oil of peppermint, which consists chiefly of menthol, with a little menthon, and contains no hydrocarbons.

According to Flückiger and Power, the English oil contains two terpenes, boiling respectively at 165° to 170° and 173° to 176°; and besides, sesquiterpene, boiling at 250° to 257°. They deny the presence of menthon.

Moriya examined American oil of specific gravity 0.9165, rotating to —39.5°. Its chief constituent was menthol. The separated liquid portion yielded three fractions of distillate: 198° to 205°; 206° to 210°; 211° to 216°. Only the first fraction was analyzed. From the figures obtained (carbon 77.18 per cent, hydrogen 12.40 per cent) Moriya concluded that the oil consisted of menthol and menthon. But, since menthon boils at 206° to 208°, it is probable that the portion analyzed contained some hydrocarbon.

Schimmel & Co. found no menthol in Italian oil of peppermint, and but little in Russian.

The authors separated the two kinds of Russian oil furnished to them for investigation, by repeated careful fractional distillation, into six fractions boiling respectively at:

1. 150°–160°	3. 163°–165°	5. 170°–173°
2. 160°–163°	4. 165°–170°	6. 173°–175°

The last fraction formed the largest portion.

Its analysis corresponded to the general composition of a terpene ($C_{10}H_{16}$). Its specific gravity at 20° C. (compared with water at 4° C.) was 0.8571. Its rotation at the same temperature, observed in a 100-Mm. tube with sodium flame, was —35.22.

From these and other properties and behavior detailed by the authors but omitted here, they are inclined to regard the above hydrocarbon as left-rotating limonen, probably accompanied by some menthon and a little pinen. They judge the amount of terpenes to amount to 17 per cent.

Since the specific rotatory power of menthon is +49.6°, and the original Russian oil rotates to near —20°, the authors believe that the oil contains chiefly dextrogyre menthon.

Specific Gravity Determinations for Practical Purposes.

At a meeting of the London section of the Society of Chemical Industry, held on April 4th, Dr. C. R. Alder Wright read a paper on the subject mentioned in the title, of which the following is an abstract (after *Chem. and Drugg.*):

In the introductory part of this paper the author called attention to several points on which current literature is at fault in dealing with factors coming under this heading. The terms "density" and "specific gravity" are frequently confounded together and used as though they were interchangeable, which, strictly, is by no means the case. By "density" is meant the mass of a unit of volume—a quantity not the same as the weight of a unit of volume. The former is independent of the gravitating force at the spot of observation; the latter not, being a quantity less by some 0.5 per cent at the equator than at the pole, *cæteris paribus*. The "relative density" of a body A (as compared with another, B) implies the numerical value of the ratio between the density of A and that of B. If A and B are both examined at the same place (or at places where the force of gravity is the same) this ratio is identical with the ratio between the weight of a given volume of A and that of the same volume of B, but not otherwise. What is meant when A is said to have such and such a "specific gravity" is that this value expresses the ratio of the density of A to that of the standard substance.

It should always be remembered that the temperature of the observation should be stated, as well as the temperature at which the standard was determined. This is very seldom done, and Dr. Wright showed that the want of such factors leads to considerable confusion. As water is unity at 4° C., it is obvious that a correction must be made on the determination of any other body, or that the temperature of the standard and of the body under examination should be given. For instance, if a sample of vegetable oil at 20° C. is found by one observer to have the specific gravity 0.92475 referred to water at 4°, by another the specific gravity 0.92560 referred to water at 15.5°, and by the third the specific gravity 0.92560 referred to water at 20°, it is impossible to say at sight whether these figures are sharply concordant or not; but if all three are reduced to "weight per cubic centimetre," by multiplying the specific gravity at the different temperatures by the specific gravity of water at these temperatures, we arrive at the same figures, viz., 0.92475.

Dr. Wright next proceeded to speak of the methods of taking specific gravities, first dealing with the pycnometer, or specific-gravity bottle, and calling attention to the corrections which must be made in using it. The first correction is for the cubical expansion of glass, which is 0.00025, or $\frac{1}{4000}$ for 1° C. This amount has to be subtracted from weighings taken at a temperature above the standard, and added to those taken below it. This correction affects the third place of decimals, and in all cases where strict accuracy is essential it is a correction which should be made. So also should the correction for air buoyancy. As bodies lighter than water displace more air than a similar weight of water, these bodies on weighing come out lighter than they really are. For instance, a fluid of specific gravity 0.7500 or thereabouts should have 0.0003 added to it; one of 1.2500 must have 0.0003 subtracted from it. The correction for 1.5000 is —0.0005, for 1.7500 it is —0.0008, and for 2.000 it is —0.0014.

The ordinary form of pycnometer, with perforated stopper and the Sprengel U-tube, is very unsatisfactory for weighing when there is liability to variation in temperature. This is owing to the liquid running over and soiling the outside of the bottle with the least rise in temperature. Dr. Wright showed two forms of pycnometer which have not this disadvantage. One was made from a 10, 25, 50, or 100 Cc. pipette, closed at one end by fusion, and with a millimetre scale etched on the stem. The other form is a flat-bottomed flask with two necks, one a long, narrow tube with millimetre scale; the other a ground tubulus, into which a stopper fits provided with a thermometer for reading of the temperature of the contents of the flask. This form is especially convenient for cleansing and refilling, the second neck allowing air to enter in a way impracticable with the first form, especially with small-sized instruments. In order to standardize this instrument for all purposes, it is requisite to know the quantity of water contained when filled up to a given level at a given temperature, and to have the means of thence calculating the quantity contained when filled up to any other level at any other temperature. This is effected by determining the quantity of water contained at a given standard temperature when filled up to the commencement of the scale, and the further quantity of water corresponding to each millimetre of the scale.

The method of doing this was explained, and the precautions which have to be noted in making the necessary corrections. It was also shown how, from the weighings with this instrument at different temperatures, the rate of expansion of any fluid may be determined, since the relative volumes of the body of the pycnometer and the stem divisions are known.

After dealing very fully with all possible conditions of weighing with such a pycnometer, Dr. Wright proceeded to speak of determinations by the immersion method. He had little to say on this matter, as it is his experience that weighing with the Westphal balance, as generally constructed, can only be relied upon to the third place of decimals. The areometric, or hydrometric, method received fuller attention. He spoke in no favorable terms of the arbitrary scales in use, such as Beaumé's and Twaddell's, and pointed out that hydrometers, as generally sold, can only be relied upon to give approximately true indications. To be thoroughly accurate the readings of the hydrometer should be checked by actual determinations, but the author prefers to abolish the hydrometer scale altogether and divide the stem into millimetres. If the hydrometer is to be used for liquids lighter than water, it is floated in water, and the point to which it sinks is marked as the zero. Subsequent weighings are made by adding weights to the hydrometer, and by a series of observations and calculations a table may be constructed for immediate translation of the hydrometric readings in practice. Instead of having the millimetre scale engraved on the stem of the hydrometer, it may be etched on the jar itself, a ring being also engraved on the body of the hydrometer like an Erdman float. The readings are then taken by observing the level of the meniscus of the fluid surface on the millimetre scale, and also that of the ring; the difference between the two, when the hydrometer floats in the standard liquid at the standard temperature, is carefully noted, representing a second constant for the particular instrument. When the hydrometer floats in the second liquid the corresponding difference of readings is noticed, and from the formula given by the author the specific gravity can be calculated. The advantage of this form of instrument is that whereas only one reading is practicable when the scale is engraved on the hydrometer stem, any number of different pairs of readings can be taken and averaged for higher accuracy when the scale is etched on the jar. This is done by adding a few drops more liquid to the contents of the jar, or pipetting out a few, thus furnishing two different level readings.

Preservation of Metallic Sodium.—Owing to the danger of preserving metallic sodium in petroleum—which has only recently been emphasized through a violent explosion—it would seem that some other, if possible non-inflammable, liquid should be selected for this purpose. Wilhelm Vaubel has recently recommended (*Zeitsch. f. angew. Chem.*, No. 7) the so-called "Paraffinum liquidum" of the German Pharmacopœia for this purpose. In a general way, any paraffin oil may be used. The best, of course, is that which is colorless. White vaseline oil or "albolene" is most preferable. The adhering oil may be easily removed by transferring the sticks or lumps of sodium to a vessel containing benzin just previous to use, and then wiping with blotting paper. Vaubel says that it may be completely removed by wiping with filtering paper. We find that this is not always the case.

The Zanzibar Clove Trade.

A BIG cloud obscures the commercial sky of Zanzibar at this moment, viz., the over-production of cloves, its staple article of trade. Since the clove tree was first introduced in the islands, about sixty years ago, it has been an enormous source of wealth to the Arab landowners and to the sultan. There have been periodical depressions in the price before, but until about three years ago 6*d.* or 7*d.* per pound was considered a very low quotation, and once, after a hurricane which destroyed the greater part of the plantations, the value of cloves rose to 1*s.* 7*d.* per pound in the London market. Lately, however, the clove crops have become larger and larger, and they are now almost every season greatly in excess of the world's estimated annual consumption, which is about 80,000 bales of 140 pounds each. As a result, the price (3½*d.* per pound) has fallen to within measurable distance of the lowest point it has ever touched, viz., 2⅞*d.* per pound in 1869—when, however, there was no export duty, or, at any rate, a much smaller one than at present.

The London warehouses are burdened at this moment with a stock of not less than 34,000 bales of the spice, and the quantities warehoused in America and the Continent are also known to be exceedingly heavy. The cause of the present depreciation of cloves lies exclusively in the short-sighted policy of the Arab plantation owners in the islands of Pemba and Zanzibar, who have neglected the culture of all other products which they might have reared with profit upon their fertile soil, and turned every available acre of land into a clove plantation, without the least thought of the inevitable effect of their action. The people and the ruler of Zanzibar have for years been practically dependent upon the returns of the clove crop for their sustenance. "A few years ago," says Mr. Portal, "the price of cloves used to range from $7 to $10 per frasila (35 pounds), and the export duty taken on them by the sultan was 30 per cent ad valorem. The price does not now exceed $2.50 to $2.75 per frasila, and the export duty has been reduced to 25 per cent." The 25-per-cent duty, the growers probably think, would give them a fair margin of profit; but there is no doubt that if it were abolished to-morrow, it is not the Zanzibar Arabs but the European spice dealers and oil distillers who would profit, for quotations here would certainly answer with a corresponding fall.—From an editorial in the *Chem. and Drugg.*

Estimation of Arsenic in Wall Paper.

To avoid the waste of time, the inconvenience of using large quantities of material, and the introduction of large percentage errors in weighing, which are involved in the ordinary form of the Marsh process, it is modified in order that the mirror obtained under standard conditions may be compared with a set of standard mirrors obtained under the same conditions from known amounts of arsenious anhydride.

Twenty, fifty, or one hundred sq. Cm. of the paper, according to the size of the pattern and the amount of arsenic present, as judged by the color of the paper and its smell when burned, are cut into small pieces and charred by heating with 1 to 5 Cc. of strong nitrosulphuric acid (1 : 30), the excess of nitric acid being afterwards expelled. The use of an oxidizing agent is essential, owing to the presence of chlorides, which would cause the volatilization of 12 to 60 per cent of the arsenic, and of sulphur compounds such as ultramarine, which would cause its retention as insoluble sulphide. Nitric acid is recommended, as it is simple and speedy in action. The oxidation of the arsenic is immaterial, as arsenic salts are found to yield the same result as arsenious salts, and the presence of small quantities of nitric acid in the Marsh flask does not cause the retention of the arsenic, as stated by Blondlot (*Compt. Rend.*, 57, 596).

The charred mass is moistened and then thoroughly broken up with 5 Cc. of water. The sulphurous anhydride is expelled by boiling, as otherwise arsenious sulphide may be formed during the subsequent operations. The liquid is filtered into a tared test tube, and the residue is repeatedly washed with hot water. If a filter pump is used the filtrate and washing need not amount to more than 35 Cc. The extract is now ready for reduction in the modified Marsh apparatus.

This consists of a wide-mouthed, india-rubber-stoppered bottle of 75 Cc. capacity, provided with a funnel tube for introducing liquids, and connected on the one hand with a continuous hydrogen apparatus, and on the other with a tube of fused calcium chloride leading to a hard glass reduction tube. Sulphuric acid cannot be used as a desiccating agent, as it dissolves the hydrogen arsenide. The reduction tube, of 7 Mm. bore, is drawn out at the end to 1.5 to 2.0 Mm. bore, and bent up and sealed. At the commencement of each operation the bottle is charged with 3 Gm. of finely granulated zinc, and, the tightness of the apparatus having been tested, the end of the reduction tube is broken, 20 Cc. of dilute (1: 8) sulphuric acid are run into the flask, and hydrogen is turned on from the generator and burned at the end of the reduction tube in a flame 1 to 2 Mm. high. By the use of an additional hydrogen generator the necessity for stimulating the evolution of hydrogen in the Marsh flask is obviated; it may be necessary even to cool the liquid. The use of hydrochloric acid in either the generator or the flask is inadmissible, as the mirror is then liable to become contaminated with zinc chloride. The air having been thoroughly expelled, the constricted part of the reduction tube is heated by a Bunsen flame kept steady by an iron cone. No mirror should appear in the course of twenty minutes.

The prepared extract is now gradually introduced through the funnel tube, the lower end of which is constricted to avoid the mechanical introduction of air. The amount added, which should not contain more than 0.06 Mgm. of arsenious anhydride, is determined by weighing the test tube before and after. After twenty-five minutes the whole of the arsenic has been transferred to the reduction tube, as, if the action is continued until all the zinc has dissolved, there is no increase in the density of the mirror.

The mirror is now compared with a standard set, made in a similar way from quantities of arsenious anhydride varying from 0.005 to 0.06 Mgm. These standards, which must be kept in the dark to avoid oxidation, are best mounted in frames which, together with a frame containing the specimen under examination, can be mounted horizontally in a box resembling a stereoscopic camera, so that the comparison may be made by transmitted light. As small an amount as 0.001 Mgm. of arsenious anhydride can be detected by the process.

As a check on the result obtained, the arsenic in the various samples of paper examined was estimated by titration with iodine, after solution and reduction with sulphurous anhydride. The organic matter was separated by igniting the paper with potassium nitrate, by charring it with nitrosulphuric acid, or by distilling it with hydrochloric acid. The results agree well.—C. R. SANGER in *Amer. Chem. Journ.*

Estimation of Combined Alkali in Soap.

THE total alkali having been determined in the usual manner, the alkali as *soap* is ascertained in the following way: A weighed quantity of soap is decomposed on a water bath with dilute sulphuric acid, cooled on ice, filtered, and the fatty acids washed three times successively with 250 Cc. of boiling water, cooling and filtering each time. Then, to determine the proportion of the alkali of the soap in combination with the soluble fatty acids, the united filtrates are made up to 1 L., and 500 Cc. of the solution titrated with decinormal alkali, using methyl orange as indicator in the first instance, and finishing off with phenolphtalein; the latter numbers, calculated to caprylic acid, are those required. The insoluble fatty acids are dried, weighed, dissolved in alcohol, and the alkali originally combined with them estimated by titrating with semi-normal alkali.

Or the acid, equivalent to the alkali existing in all forms, is obtained by decomposing the soap with standard sulphuric acid, titrating the excess with methyl orange, and deducting it from the total quantity of acid employed.—J. A. WILSON in *Chem. News* and *Journ. Chem. Soc.*

Medicated Cod-Liver Oil.

THE Swiss Committee on the Revision of the Pharmacopœia have published a number of formulæ which have been elaborated, but regarding which it is as yet undecided whether they will be put in the final text. The following are here given after the *Schweiz. Wochenschr. Chem. und Pharm.*

1. *Oleum Jecoris Ferratum.*

Ferrated Cod-Liver Oil.

Ferric Chloride, sublimed	3 parts.
Cod-Liver Oil	997 "

Dissolve the ferric chloride by triturating it in a mortar with the oil gradually added, then filter.

The product is a clear reddish-brown liquid, containing 1per cent of iron.

This preparation has heretofore been usually made with ferric benzoate. But the latter salt is not soluble in cod-liver oil in the cold. On the other hand, heating increases the fishy taste of the oil.

2. *Oleum Jecoris Iodatum.*

Iodized Cod-Liver Oil.

Iodine	1 part.
Chloroform	3 parts.
Cod-Liver Oil	996 "

Triturate the iodine in a mortar with the chloroform, and gradually add the oil until solution has taken place

The product has the same color, odor, and taste as the original oil. When shaken with gelatinized starch, it should not color the latter.

3. *Oleum Jecoris Ferro-Iodatum.*

Ferro-Iodized Cod-Liver Oil.

Iron, in powder	2 parts.
Iodine	4 "
Cod-Liver Oil	enough to make 1,000 "

Triturate the iron and iodine in a mortar with 40 parts of cod-liver oil and a little ether until all the iodine has disappeared and a black mixture has resulted, mix this with enough cod-liver oil to produce 1,000 parts, and filter.

The product has a brownish-red color, and contains 5 per cent of ferrous iodide.

A Remarkable Fluorescent Substance.

SOME time ago Willgerodt obtained a derivative of benzol which he regarded as dinitroso-azobenzol. Recently F. Kehrmann and J. Messinger have studied the same body, and have found that it is, in reality, a nitro- and not a nitroso-compound, its proper name, according to the present rules of nomenclature, being nitro-phenyl-azimido-benzol. The body is prepared in the following manner:

Twenty Gm. of dinitrobrombenzol, mixed with 2 molecules of phenylhydrazine and 1 molecule of sodium acetate, and contained in a flask holding about ½ L., are heated with 200 Cc. of alcohol, under an upright condenser, at a boiling temperature, until the mass becomes viscid from the formation of crystals. After cooling, the latter are separated from the liquid by means of a filter pump, then boiled with small quantities of alcohol to remove adhering impurities, and finally recrystallized from boiling benzol.

The product appears in almost colorless needles showing a brownish fluorescence.

This substance is remarkable through its property of exhibiting a different fluorescence in its different solvents:

Water. In this liquid the substance is almost insoluble. Yet the very weak watery solution has a *pure-green* fluorescence.

Alcohol—bluish-green fluorescence.

Ether—ultramarine-blue fluorescence.

Benzol—violet fluorescence.

Chloroform—like benzol.

Carbon Disulphide—no fluorescence visible to the eye. —After *Berichte*, 1892, 898.

The Solubility of Sugar in Water.

A. HERZFELD has re-examined the solubility of crystallized cane sugar in water, using special precautions to insure saturated solutions at the several temperatures at which the determinations were made, and with the most careful control of temperature. He found that all previous tables of solubilities of sugar needed more or less correction.

The curve of solubility for any given degree of temperature, and for 100 parts of water, was determined (by the method of least squares) to be—

$$0.0005307x^2 + 0.13477x + 64.1835$$

where x denotes degrees of centigrade. Hence we obtain:

$$0.1184075 + 2.02155 + 64.1835 = 66.32$$

The following condensed table shows the solubilities of sugar in 100 parts of water at various temperatures:

Temp. ° C.	Sugar. Parts.	Temp. ° C.	Sugar. Parts.
0	64.18	55	73.20
5	64.87	60	74.18
10	65.58	65	75.18
15	66.32	70	76.22
20	67.09	75	77.27
25	67.89	80	78.36
30	68.70	85	79.46
35	69.55	90	80.61
40	70.42	95	81.77
45	71.32	100	82.97
50	72.25		

[At 15° C. the author gives 66.33; this should, however, be 66.32, as the above given calculation demands.]—After *Zeitsch. d. Ver. f. Rübenzuckerindustrie.*

Production of Quicksilver at Almaden.

THE Quicksilver Mines and Reduction Works of New Almaden are 15 miles south of the city of San José, Santa Clara County, Cal., in the Santa Cruz Mountains, at an elevation of 1,700 feet above the sea. These mines were first worked for quicksilver in 1845, but the operations were on a small scale, and no record exists earlier than 1850. They have been the most productive quicksilver mines in the world, excepting only the mine of Almaden in Spain. They are developed to a depth of 2,300 feet, and the workings extend horizontally over an area 1 mile square.

From January 1st, 1864, to December 31st, 1891, the number of feet of drifting and sinking in the mines of the company, as shown by the records, amounted to 49.11 miles, at a cost of $2,191,831.95. This does not include the excavation made in extracting ore during the period named, nor any expenses for the same, while for the ground opened up during the previous period (from 1850 to 1864) more miles of drifting and sinking can be added.

The reduction works consist of 8 furnaces, include the most improved methods for working quicksilver ores, and may be considered as the most complete and perfect in every respect in the world.

The total product of all the mines on the company's property for thirty-eight years has been 924,659 flasks of 76½ pounds each, or 70,736,413½ pounds.

The total earnings of the company for twenty-one years past have been about $15,000,000, and the total profits a little over $5,000,000.

Maize or Corn Oil.—Maize oil, or oil of corn, regarding which we published an interesting article by Prof. J. U. Lloyd in our volume for 1888, p. 141, is now produced in large quantities. A Chicago glucose factory is reported by the *Shipping and Commercial List* to turn out 1,500 barrels [gallons?] per day. The proportion of oil in Indian corn is about 4 per cent.

The Specific Gravity of Pure Chloroform, according to Messrs. Helbing and Passmore, is 1.5002 at 15° C.

Prof. E. D. Campbell, in charge of the department of qualitative analysis in the laboratory of the University of Michigan, at Ann Arbor, suffered the loss of both eyes on April 13th, in consequence of an explosion of a mixture of oxygen and hydrogen.

New Method of Organic Analysis.—A new method of analyzing organic compounds has been designed by M. Berthelot, who, abolishing the dirty and troublesome cupric oxide, burns the material in oxygen compressed to 25 atmospheres. The combustion thus effected is said to be total and instantaneous, and the percentage of carbon can be ascertained with much greater precision and despatch.—*Chem. and Drugg.*

Prof. Albert P. Brown, a well-known analytical chemist of Camden, N. J., recently died of laryngeal tuberculosis consecutive to an attack of epidemic influenza. He was born in Philadelphia in 1840, graduated from the Philadelphia College of Pharmacy in 1861, established a drug store in Camden in 1862, and was some time Professor of Microscopy at the Philadelphia College of Pharmacy. He was a member of the State Board of Pharmacy and for more than eight years its secretary, and a member of the Camden Astronomical Society and of several beneficent organizations. A wife and one child survive him.

Gallacetophenon.—This body was originally introduced as a dye stuff and known under the name "alizarin-yellow C." Later, when its constitution was understood, it was named trioxyacetophenon. Its formula is $(OH)_3.C_6H_2.COCH_3$. It is a derivative of pyrogallic acid, and is prepared by heating 1 part of pyrogallic acid with 1.5 parts of acetic acid and 1.5 parts of zinc chloride to a temperature of 145° to 150° C.

Gallacetophenon is used as a substitute for pyrogallic acid in skin diseases, as an external application. It is reported to be free from the drawbacks connected with pyrogallic acid.

Government Manufacture of Galenicals in Russia.—According to the *Nowoje Wremja*, one of the leading Russian papers, the revision of the official maximum tariff for compound remedies, just completed, is but the first step toward a still greater cheapening of medicines. The commission of the Medical Council entrusted with the revision of the pharmacy law proposes, moreover, to establish Government factories for the manufacture of pharmaceutical preparations. Dr. Duncan, senior police surgeon in St. Petersburg, has been placed at the disposal of the commission for the purpose of enabling him to investigate the process of manufacturing galenicals in wholesale quantities.—*Brit. and Col. Drugg.*

Moth Destroyer.—According to the *Rundschau* (Prague) the most efficient method of destroying moths in fabrics, etc., is to spray them with a solution of 1 part of naphtalin in 100 parts of benzin, to which a little oil of patchouli or camphor has been added to mask the odor of naphtalin.

It should be added that great caution should be exercised in using this liquid, as it is highly inflammable. If a light is brought in contact with the atmosphere of a room impregnated with benzin vapor, an explosion with flame may result. If the operation of spraying is performed indoors, windows and doors should be opened and no light used until the atmosphere is nearly free from the odor of benzin.

Light Sulphate of Quinine.—Carles reports that when a few crystals of ammonium sulphate are added to a hot saturated solution of quinine sulphate and allowed to dissolve slowly, the quinine salt crystallizes in a very voluminous form. In operating upon the large scale the ammonium sulphate crystals may be added to a portion of the solution to be crystallized, and when that becomes a thick paste by crystallization it may be mixed with the larger quantity and stirred until the whole crystallizes. About 4 Gm. of the salt to 1 L. of solution gives the best result. The presence of the ammonium salt appears to act by reducing the solubility of the quinine sulphate, and as a further advantage much less remains dissolved in the mother liquor.—*Bull. Soc. Chim.*, iv. 108, and *Pharm. Journ.*

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BIBLIOGRAPHY.

TESTS AND APPARATUS FOR THE CLINICAL EXAMINATION OF THE URINE, WITH DIRECTIONS FOR USE.

W. T. Cooper, Jr., pharmaceutical chemist at 66 Oxford street, London, will send this very handy pamphlet, containing tests and time-saving tables, to any one in this country who may desire it. The tests for estimation and quantitative determination of acidity, albumin, sugar, and urea are such as are at present found most practically useful for chemical work.

THE PHARMACAL CALENDAR FOR 1892. Being an Exhibit of Pharmacy in the United States as related to Colleges, Associations, and Pharmacy Laws, together with Synopses of Drugs, with their Strengths, Doses, and Synonyms. By C. S. HALLBERG. 12mo. Chicago [1892].

We welcome this handy little volume as an agreeable addition to our indispensable works of reference. It contains a mass of information necessary for the pharmacist to know or to be able to refer to at a moment's notice, and which had heretofore often to be procured by searching the current literature or by a mass of correspondence. For instance, the composition of the various Pharmacy Boards, their several requirements, dates and places of meeting, etc., etc., will be a welcome source of information. Among the most valuable chapters is a List of New Remedies, giving names, composition, properties, and doses.

Only those who have themselves endeavored to collect reliable statistics on various topics can realize the labor involved in the preparation of the *first issue* of such a work. The correspondence relating to Pharmaceutical Colleges and Associations and the Pharmacy Boards, by which the various data were obtained, must have alone been voluminous. But the foundation having been laid, each succeeding issue will, no doubt, be made more comprehensive and practical than its predecessor. A few suggestions are here offered. The following would be desirable additions: Laws on Adulteration of Food and Drugs (a digest would be sufficient); Poison Laws; Tariff and Internal Revenue Laws relating to Drugs; Table of Equivalents of Moneys; Postal and Telegraph Charges. As an improvement we would suggest that the page numbers be *always* printed at the top of the page (left or right corner), even if the page contains a table or some other matter where printers are in the habit either of omitting it altogether or placing it at the bottom. The list of German names of drugs needs considerable revision.

NEWS AND NOTES.

NEW ENGLAND.

THE druggists of Salem, Mass., have for two or three years past been drifting into the cut system. Last week they met, pursuant to a call, to see if some steps could be taken whereby better and more uniform prices could be obtained. There was a strong and unmistakable sentiment in favor of such action. Another meeting will soon be held, when it is probable that a uniform price list will be adopted.

MR. A. J. BASIL, a well-known druggist of Haverhill, Mass., has been missing for two or three weeks. He was being pressed by a wholesale liquor house of Boston to forward money to pay a note due them.

He drew out what money he had in the bank and left ostensibly for Boston, and since then no tidings of him have been received. Probably he had not the courage to remain and face his creditors. Wood, Pollard & Co., the Boston firm, have placed an attachment upon the store.

The death of SOLOMON CARTER, the oldest member of the wholesale drug trade in Massachusetts, occurred at Savannah, Ga., on April 11th. During the past winter Mr. Carter's health was not good, but just prior to his death he seemed stronger than he had been for some months.

His death at the last was sudden, and was a severe blow to his family and many friends.

Mr. Carter was much loved and respected, and by his long and honorable business career, and by his fidelity to State and city affairs, he built an enviable reputation for himself.

He was held in the highest esteem by all of his acquaintances; he was genial, generous, honest to a fault, and always ready to aid and assist the needy. He was uniformly courteous to all who had dealings with him, and, to use the words of his many friends, "his place can never be filled." Mr. Carter's career was a remarkable one. He was the oldest son of Solomon and Elizabeth (White) Carter, and was born in Lancaster, Worcester County, January 19th, 1816. He had three brothers—William, who settled in Chicago and was a prominent citizen of that place; George F., who lived at Cambridge and who occupied several important public positions, both of whom are dead; and James C., a distinguished lawyer of New York.

Solomon Carter, dec.

His education was acquired in his native town, with the exception of two terms at an evening school situated on Harvard place, opposite the Old South Church, in Boston.

He was employed for a short time, while a boy, in a dry goods store, and then became an apprentice in the drug store of Gregg & Hollis. He began a retail business in 1839, at the West End, and afterward removed to Hanover street, where he continued in the wholesale and retail business for about thirty years, under the style of Solomon Carter, Solomon Carter & Co., Carter, Wilson & Co., Carter, Colcord & Preston, and Carter, Rust & Co.

He then disposed of his store and formed a new concern on Washington, opposite School street, under the style of Carter & Wiley, and later Carter, Harris & Hawley. The firm with which he was last connected is known as Carter, Carter & Kilham, located on Washington street.

He was a member of the city council in 1849 and 1850, of the board of aldermen in 1857, and served two years upon the board of assessors. He was in the Legislature in 1869-70. Mr. Carter filled all of these public positions with much credit to himself. He was also president of the Mercantile Library Association for many years. In April, 1845, he was married to Abby, daughter of Levi and Abigail Lewis, of Lancaster. There were four children—Frank Edward, who died in 1881; Fred L., Herbert L., and Clarence Carter. Fred L. and Herbert L. were associated in business with their father.

Mr. Carter was a prominent Whig in 1840, and an active Republican in the election of the second Harrison in 1888.

He was a member of the Massachusetts College of Pharmacy, and has served that institution in several official capacities. He joined the Boston Druggists' Association early in its career, and took a prominent part in the management of its affairs; he was president of the Association in 1884, and was the first of the ex-presidents to die. He joined the American Pharmaceutical Association in 1865, and attended many of its meetings. He was prominently connected with the National Wholesale Druggists' Association, and had a membership in many Masonic orders. On the announcement of Mr. Carter's death a special meeting of the Boston Druggists' Association was called, which was largely attended. Eulogistic remarks were made by many friends and business associates of the deceased. The following resolutions, prepared by Messrs. Theodore Metcalf and Nathaniel J. Rust, were unanimously adopted:

"No loss since our organization has caused more universal and sincere grief than the departure of our late friend and associate, Solomon Carter, who has left us at a ripe old age, taking with him the respect and the attachment with which his upright character and his genial disposition have inspired us;

"*Resolved*, That a committee of this Association attend the funeral of our late friend, that this resolution be entered upon our records, and that a copy be sent to his family and surviving partners."

President West appointed Nathaniel J. Rust, Theodore Metcalf, Francis Hollis, Samuel A. D. Sheppard, and E. Waldo Cutler a committee to attend the funeral, and Dr. Thomas L. Jenks was appointed to represent the Association as pallbearer.

At a special meeting of the trustees of the Massachusetts College of Pharmacy, held on April 15th, these resolutions were unanimously adopted:

"*Whereas*, It has pleased God in His divine wisdom to remove from our midst Solomon Carter, for many years a respected member of the Massachusetts College of Pharmacy and one of its past presidents; therefore,

"*Resolved*, That we, the trustees of the Massachusetts College of Pharmacy, place on record our sense of the loss we sustain in his decease.

"*Resolved*, That we record our appreciation of his many estimable qualities, and especially of his sterling honesty, his earnest zeal, and his sincere interest in all matters pertaining to our college and the advancement of pharmacy.

"*Resolved*, That we offer to the family of our lamented member our sincere condolence in this time of sorrow.

"*Resolved*, That these resolutions be entered upon our records, and a copy engrossed and sent to the family of our deceased friend."

The trustees of the college voted to send flowers to the funeral, and the following committeee was appointed to attend the funeral: Samuel A. D. Sheppard, Henry Canning, Benjamin F. Stacey, Charles C. Williams, and William F. Sawyer.

The funeral took place on April 15th at Mt. Auburn Chapel, the burial services being conducted by Rev. Minot J. Savage. Delegations were present from the Massachusetts College of Pharmacy, the Mercantile Library Association, and numerous Masonic orders with which Mr. Carter was connected. A large number of the

employees of the firm of which Mr. Carter was bead were also present.

The pallbearers were Dr. Thomas L. Jenks, George F. Hawley, George Gutterson, and Mr. Howe. The ushers were Messrs. Wellington, Pierce, and Preston.

The annual meeting of the Alumni Association of the Massachusetts College of Pharmacy was held at the college building on the evening of April 14th, President Wiltse in the chair. After listening to the reports of the secretary and treasurer the following officers were elected for the ensuing year: President, Wilbur L. Scoville; vice-presidents, Irving P. Gammon and Joseph A. Tailby; secretary, Lyman W. Griffin; treasurer, James O. Jordan; auditor, John G. Godding. The officers were appointed a committee to make arrangements for the annual dinner. All members of the Association who have changed their addresses within the past year are requested to notify Secretary Griffin, at 63 Warren avenue, at once.

CHARLÆS M. OVERBECK, a Gloucester druggist, was found dead on Western avenue on the night of April 13th. His death was caused by heart disease. He was a prominent Odd-Fellow.

The "cutters" of Boston have the science of substitution down to a fine art. The unwary customer is first inveigled into their stores by advertisements announcing numerous presents in the shape of books, etc., which will be given to purchasers of certain amounts of goods. Then it is, if the purchaser is in want of some well-known patent medicine, that the trap is sprung. The *obliging* clerk, while making a pretence of supplying the customer's wants, takes good care to display and "talk up" preparations of a similar kind manufactured by his employer. In a great many instances the salesman succeeds in his attempt, and the purchaser departs, not with the article called for, but something which the glib tongue of the clerk has convinced him he wanted. A Tremont street firm of "cutters" stimulates these sales by paying its clerks 5 cents for each sale of the above kind. It is said that one clerk in the employ of this firm frequently earns $10 per week by his success in this line.

The following is a list of Woburn druggists who have applied to the board of aldermen for sixth-class licenses: Charles H. Buss, 394 Main street; Gordon Parker, 417 Main street; James Maddigan, 156 Main street; Edward G. Nicholson, 314 Main street; Fred. E. Lovell, 361 Main street; Elmer F. Blank, 317 Main street; John J. Mahern, 216 Main street; Arthur W. Whitcher, 15 Pleasant street.

The CARTER, CARTER & KILHAM'S nine has organized for the season with the following players: Henderson, 1 b.; Berry, s. s.; Shea, c.; McLeod, 2 b.; Ayres, p.; Mansfield, l. f.; Leitch, c. f.; Card, 3 b.; Marmand, r. f. Would like to arrange games with any nine in the drug trade. Cutler Bros., Weeks & Potter preferred. Address Manager B. B. C., 356 Washington street, city.

A prominent West End druggist of Boston says that he disposes of $100 worth of stamps per week to his customers. He takes all of this trouble simply to accommodate, and claims that he is well repaid for his pains.

Clerks in all the drug stores of Biddeford, Maine, were arraigned in the police court on April 13th, charged with selling liquor, and bound over to the May term of the Supreme Court. Evidence was furnished by the local lodge of Good Templars. From Readfield, Maine, comes the news of the arrest of Dr. W. A. Wright by a United States Marshal, charged with selling liquor without paying a tax. Before Commissioner Rand he pleaded not guilty, and was released on his own recognizance. Dr. Wright says that when he kept a drug store he paid a liquor tax, but when he began practising medicine he was told by a deputy collector that the tax was not needed. He says he prescribed liquor for patients, but never sold it for a beverage.

HON. GORHAM D. GILMAN is talked of for the position of councillor from his district. The Boston *Herald* says of Senator Gilman: "He is as active, if not more active, than most of the men who sit about the circular row of desks. Mr. Gilman comes from Newton. He has voted about right on all matters in his long service in the House and Senate."

GEORGE P. BROOKS, of 782 Dudley street, Roxbury, was before the police board on April 15th for illegally selling liquor. No decision was rendered in the case.

At the last meeting of the trustees of the Massachusetts College of Pharmacy, ELIE H. LA PIERRE, Ph.G., was elected to the position of director of the pharmaceutical laboratory. Since Dr. Greenleaf's promotion to the professorship in materia medica Mr. La Pierre has held the position of instructor in the latter department. Mr. La Pierre is engaged in business in Cambridgeport; he graduated in the class of '81, and he has served as a trustee. It is the intention of the trustees to have the director of the pharmaceutical laboratory act as instructor in the pharmacy department, thus doing away with the latter position.

MISS HATTIE B. SLADEN, of Lowell, Mass., a former employee of J. C. Ayer & Co., was married to Fred. L. Hodgman, of Manchester, N. H., on April 12th. Miss Sladen was substantially remembered by her fellow-workers.

The quarterly report of Chief of Police Richards, of Malden, shows 6,165 sales of liquor by druggists for the quarter just ended. As each sale averages 1 pint, the total sales of liquor would be 3,082½ quarts, which would equal 770 gallons, or 15⅛ barrels. This is thought by the temperance people to be an extraordinarily large sale for a city that votes against license. Some of the druggists claim that this excessive sale is due to la grippe.

BENJAMIN F. STACEY, of Thompson square, Charlestown, has suffered a severe loss by the pilferings of one of his clerks. The amount stolen was nearly $1,000. The clerk is now in Charles street jail awaiting the action of the Superior Court. Mr. Stacey has just been elected president of the Charlestown Improvement Association.

Officers of Amesbury seized 3 barrels as they were being unloaded at E. J. BAHAN'S drug store in Main street recently. When the barrels were opened they were found to contain lager beer, ale, and porter in bottles. Mr. Bahan has a sixth-class license, and claims a right to keep the stuff, as he has prescriptions from physicians calling for it. He proposes to fight the case.

T. C. BARDEN, the recently elected member of the school committee, was driving in a buggy with Mrs. Barden a short time ago, and while turning the corner of Beach and Federal streets an electric car crashed into the rear of the carriage, throwing both occupants out. Mr. Barden was badly bruised about the head and shoulders, and Mrs. Barden sustained a number of bad scalp wounds and internal injuries. In the confusion the car slipped away, and no one knows what car it was or who was to blame.

C. C. BRADY, a Somerville druggist, is incarcerated in the McLean Insane Asylum as the result of overwork. Mr. Brady recently completed the erection of a block of houses, and in his anxiety to make the final payments on this property he made a slave of himself. Mr. Brady manifested symptoms of mild insanity at first, but later became so violent that commitment to a hospital was a necessity. Mr. Brady did a good business; he began life working for Weeks & Potter as a boy. This firm speak well of him.

The board of aldermen of Newburyport have granted sixth-class licenses to Charles L. Davis, Paul Adams, Joseph Williams, Karl Castletum, George Osgood, Eben Bradbury, and Charles R. Smith.

SAMUEL WEBSTER, of Wilton, N. H., was married to Abbie W. McGinley, of Lyndeborough, recently. The couple will reside in Wilton, where Mr. Webster is engaged in business.

The New Hampshire State Board of Pharmacy held a meeting at Manchester on April 27th.

JOSEPH LEARY, who owned a drug store in Rochester, N. H., failed recently. He then sold out his stock, and now offers his numerous creditors twenty-five cents on the dollar. Many of them belong in Manchester, and say they will think twice before accepting the offer.

FRANK L. WAY, of West Manchester, N. H., opened his new West Side Colonial Drug Store to the public on April 11th. The store was especially arranged for the occasion, potted plants, pictures, etc., being tastefully displayed. The store is one of the best appointed in the

city, and the prescription department—Mr. Way's especial pride—is said to be the most complete and convenient of any in New Hampshire. The whole store is most conveniently arranged, the various parts being connected by speaking tubes and electric bells, including the lavatory in the basement.

The year's work at the Massachusetts College of Pharmacy is almost completed. The annual examinations commence on May 2d, and will be completed on the 6th. The reading of theses by the successful seniors will occur at 7 P.M. on May 11th, 12th, and 13th. The trustees' practical examination will take place on the 9th of May, and the graduating exercises are put down for the 25th. In all probability the complimentary dinner tendered to the graduating class will be given on the evening of May 26th.

Worcester's board of aldermen, on the evening of March 18th, in secret session, voted not to grant any licenses of the sixth class to druggists during the coming no-license year.

ENGLAND.

THE chemistry of the aconite alkaloids is now in a fair way of being cleared up. Until the recent communication of the Research Laboratory of the Pharmaceutical Society to the Chemical Society was published, very little real progress in the investigation could be recorded. The classical researches of Drs. Wright and Luff had been confirmed in most of their essential features. An important step in advance of this inquiry has now been satisfactorily settled. Wright and Luff concluded that aconitine, the crystallizable active constituent, was accompanied with less active amorphous bases which were formed during the process of extraction. By careful precautions to eliminate this possibility, Dunstan and Umney have proved that aconitine is always accompanied in aconite root with three uncrystallizable alkaloids. The quantity of these three is also more than twice as great as the amount of pure aconitine. The physiological action of all four are being examined by Dr. Waller, of St. Mary's Hospital. In connection with the special care that has been taken to insure true specimens of *Aconitum Napellus*, it is interesting to learn that the roots were obtained from Mr. E. M. Holmes, F.L.S., curator of Society's Museum, from plants grown at his residence. As they were complete plants there was no difficulty in determining with exactness that they were genuine. It is well known that some of the best botanists do not like to give opinions on the authenticity of roots unless accompanied with leaves and, if possible, flowers. When submitted to hydraulic pressure 22 pounds of roots yielded about 10 pounds of liquid. More complete exhaustion was obtained by soaking the roots with distilled water and again pressing.

A single drop of this liquid produced on the tongue the characteristic tingling sensation. The proteids, etc., were precipitated by acetic acid and the filtered liquid extracted with chloroform, which removed resin and a little alkaloidal acetates. Excess of bicarbonate of sodium was now added, and the alkaloids extracted by shaking with chloroform, which on evaporation left a gummy residue of alkaloids. The juice of the root was found to contain about 0.05 per cent of alkaloids, consisting chiefly of amorphous alkaloids containing a small quantity of aconitine.

The pressed roots evidently still contained much alkaloid, so they were dried, powdered, and extracted with fusel oil. The alkaloids were separated from this by shaking with water containing 1 per cent of sulphuric acid, neutralizing with ammonia, and extracted with ether. Aconitine was best separated by crystallizing as hydrobromide, whilst another base has also been crystallized which the authors desire to call napelline. This latter base is very troublesome to crystallize free from an amorphous base which they propose to call homonapelline. Aconine was also obtained, and they have no doubt that all these alkaloids occur in the roots of aconite and are not products of hydrolysis.

It is also satisfactory to record that besides the aconite alkaloids investigation the Laboratory has in hand and already made progress with the isolation of the active principle of croton oil, whilst the difference between theine and caffeine is also occupying attention. The practical value of the work carried out has received the recognition of the Royal Society, which has granted £750 towards the expenses. This sum is a portion of the fund annually granted by the Government to aid scientific research.

The editor of *Hygiene* some time ago entered upon a crusade against popular patent and proprietary medicines.

Considering the magnitude of the subject, he must be indeed a bold man, but it is hardly likely that he will effect much good. The people of this country are too fond of dosing themselves and too faithful believers in the advertisements of cure-alls to relinquish them at the bidding of an orthodox practitioner. The editor also makes a fatal blunder in intimating that patented and proprietary articles are alike. The fact is, patent medicines—really patented—are very few indeed and their composition stated in the terms of the specification, whilst the proprietary preparations are legion and their composition almost unknown. The confusion has arisen from the decision of the Inland Revenue that all articles recommended for the cure or alleviation of pain, disease, etc., require a patent medicine stamp of three cents on each article of the value of twenty-four cents. Some idea of the extent of the sales of these articles is obtained from the fact that the Government receipts for these stamps last year amounted to over $1,500,000. To expose a few of the most notorious, the editor of *Hygiene* has had analyses made, and the following are given on the strength of the analytical skill of Mr. A. W. Stokes, F.C.S., a public analyst. Siegel's syrup is stated to contain 120 gr. of aloes in 4 ounces as the active ingredient, together with treacle, borax, capsicum, and licorice. Holloway's pills contain aloes, rhubarb, saffron, pepper, and sulphate of soda. Holloway's ointment is credited with olive oil, lard, resin, wax, turpentine, and spermaceti. Sequali's Prairie Flower is rather stronger in aloes than Siegel's syrup, and contains bicarbonate of soda, capsicum, and myrrh. Count Mattei's electric remedies, which retail at ninety cents a bottle, consist of plain undistilled water, and are totally devoid of electric properties. Clarke's blood mixture contains 3 gr. of iodide of potassium in a dose, with chloric ether, water, and burnt sugar. One is naturally struck with the simplicity of composition of these articles, but in this respect the Count's remedies are *facile princeps!*

London Market Report.

MINCING LANE, April 14th, 1892.

There has been a very quiet tone lately in both chemical and drug markets. As anticipated in last month's advice, ipecacuanha is falling, and as large arrivals have taken place, prices will probably go much lower. Opium has been fairly busy, but at reduced rates; wholesalers are stocking themselves as far as possible. Senega root is dearer, whilst ergot is firm at high rates. Current prices as follows:

Acid, Citric	per lb.,	$0.36	Ipecacuanha Rio.	per lb.,	$1.64
Tartaric	"	.24	Carthagena	"	1.40
Bleaching Powder	per cwt.,	1.92	Mercury	"	.37
Borax	" "	7.20	Calomel	"	.62
Cream of Tartar	per lb.,	.22	Corrosive	"	.54
Ergot, Spanish	"	.64	Opium	"	2.06
Belgian	"	.52	Persian	"	2.28
Balsam Peru	"	1.16	Quinine, German	per oz.,	.19
Tolu	"	.28	Howard's	"	.25
Coca Leaves	"	.36	Senega Root	per lb.,	.44
Cocaine	per oz.,	3.02	Shellac TN	"	.17
			Garnet AC	"	.16

Inflammable Buttons.—Prof. Boys has recently called attention to the inflammable nature of articles manufactured from celluloid. In one particular instance some buttons, exposed near a bright fire, suddenly ignited. An imitation amber mouthpiece of a pipe has also been known to undergo rapid combustion when a lighted match was accidentally applied to it. Seeing that combs, hairpins, billiard balls, and many other articles constantly exposed to heat rays are frequently made from this substance, it appears to be necessary to exercise some care in making use of them.—*Pharm. Journ.*